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Dear Cooperator:

District Supervisors Hold Second State-wide Conference at Mitchell

District Supervisors from 14 soil conservation districts in South Dakota held a two-day meeting at Mitchell on February 3 and 4. This meeting was called by the State Soil Conservation Committee at the request of various districts. Members of the State Committee who attended the meeting were A. M. Eberle, Millard Scott, Earl Hammerquist, and Ross D. Davies, Secretary for the Committee.

The Supervisors spent the first forenoon making reports of the progress in the different areas and in describing methods being used to solve the conservation problems. They divided into three committees for the afternoon session and the forenoon of the second day.

Speakers on the program also included Dr. Lyman Jackson, President of State College, Ivan Hobson of Washington, D. C. and A. E. McClymonds of Lincoln, Neb., both of the Soil Conservation Service, A. L. Ford from the Forest Service, and J. W. Cluett of the State Game and Fish Department

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State Organization of Supervisors Perfectured at State Meeting

E. B. Dwight, Chairman of the Board of Supervisors of the Emanuel-Choteau Creek District, is the new Chairman of a state-wide organization of soil conservation districts. Frank Feser of Brown-Marshall is Vice-Chairman and J. M. Heimer of Tri-County is Treasurer. Other members of the Board of Directors are Henry Abild from Clay County; Horace Wagner, American Creek; Ernest Ham, Elk Creek; and Clyde Sargent, from the Clearfield-Keyapaha District. The Board was elected at the meeting held this month in Mitchell.

This group will represent the different districts in all matters regarding proposed legislation, relations with state and federal agencies, and any other conservation problems of a state-wide nature. They will call meetings of the District Supervisors from time to time, determine where these meetings will be held and what subjects will be discussed. They are already thinking about setting aside a conservation day or week sometime this summer on a state basis.

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Cooperator in Emanuel-Choteau District
Increases Yield 50% with Contour Lines

Tom Dempster, a cooperator in the Emanuel-Choteau Creek soil conservation district, with the assistance of district engineers, laid out contour lines on his cultivated fields this spring and increased yields 50 percent on one of the fields. His farm is on rolling land which slopes as much as 17 percent. A damming lister had been used on this field the previous year which may account for some increase in yield.

Mr. Dempster describes his experience in 1940 with the statement, "I know contour farming increased my corn yield 50 percent and it has meant the difference of an extra crib of sealed corn on the place. Other corn fields in the area receiving the same amount of moisture made from 8 to 20 bushels to the acre while my contour field made 33 bushels per acre."

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Studies Reveal More Grass on Contour
Furrowed Pastures in Beadle County

The value of contour pasture furrows on a 13.1 percent slope in Beadle county has been carefully studied over a three-year period. The average yield of grass on the furrowed area for the three-year period is 752 pounds per acre compared with 489 pounds per acre on the corresponding unfurrowed area. The total yield of grass on the furrowed area which was neither grazed nor clipped from 1937 to 1940 was 2,093 pounds per acre. On the unfurrowed area, treated in like manner, the yield was only 526 pounds per acre.

A similar experiment was tried on a 1.7 percent slope. The average yield on the furrowed area was 1,018 pounds per acre while the corresponding yield on the unfurrowed area was 431 pounds per acre. The soil moisture on the 1.7 slope is practically the same on both areas, however, it varied a great deal on the 13.1 percent slope.

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Extra Moisture on Contours Brings
Bigger Barley Yields on Huron Farm

A comparison of contour strip cropping and block farming was made on one farm in the Huron Soil Conservation Service demonstration area this year. These fields were planted to barley on land where the previous crop, seedbed preparation, seed, and other factors were identical. All operations on the different fields were performed at approximately the same time. Barley on the contour yielded 20.7 bushels per acre, while the yield on the block farm field was 14.6 bushels per acre. These one-year results would indicate that considerable moisture was conserved by the practice of contour farming.

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Brown-Marshall District will Continue
WPA Assistance Because of Good Results

The Supervisors in the Brown-Marshall soil conservation district are so well pleased with the WPA assistance they received in 1940 that they are planning to continue the project this year. Through this district-sponsored project WPA laborers were obtained to assist in establishing erosion control practices. Conservation practices used in the district through which WPA labor is utilized include: Field tree windbreaks, fencing for controlled grazing, tree protection, grass seeding protection, fence row drift cleaning, hummock leveling and plant residue spreading for soil stabilization.

The Emanuel-Choteau Creek and Clearfield-Keyapaha districts have projects approved for the use of WPA labor to assist in carrying out the district plan. The Silver Creek district recently submitted a project proposal. In each area this labor is used to aid individual farmers to execute a complete conservation plan on their farms. The conservation practices vary in each district and are planned to fit the area where they are being applied.

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Brown-Marshall Cooperator Reaping the Benefit of Soil Conservation Practices

Albert Severin of Hecla, S. Dak., who is a cooperator in the Brown-Marshall soil conservation district recently made the following statement:

"The soil conservation practices I have adopted--strip cropping, grass seeding, controlled grazing, field and farmstead tree plantings--are now and will in future generations pay tremendous returns on the investment. The strip cropping costs nothing but the effort in measuring out the strips. Strip cropping has several times saved me serious losses from drifting. The tree and farmstead windbreaks do take plenty of work to keep the weeds out but yields are increased as shown by the effect of the field windbreak planted by A. M. Mitchell about 1900. Crops for 40 rods or more north of these willows are better than farther out.

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CCC Camp at Chamberlain Performs Many Useful Conservation Jobs During 1940

A great variety of soil conservation work was accomplished by the CCC Camp at Chamberlain during 1940. This included stock water dam construction and fence construction for range control, rip-rap on the Missouri River bank, contouring of fields, tree planting, building structures for gully control and water spreading, spring developments, and construction of irrigation systems. Many existing fences were covered with drifted soil and had to be bladed clean before being removed and rebuilt. The work areas for the camp, the Brule-Buffalo and American Creek soil conservation districts, together consisting of nearly a million acres. During the year, 236,516 consecutive man-hours were worked without a lost-time accident. The following figures show the fence, dam, and river bank control work completed in 1940.

Fence

	<u>Rods</u>	<u>Miles</u>
Fence constructed	39,702	124.1
Fence removed	38,585	120.3
Drifts leveled	8,884	27.8

Dams

	<u>Total</u>	<u>Ave. per Dam</u>
Number	34	
Earth fill	52,769 cu.yds.	1,499 cu.yds.
Pond area	47.3 ac.	1.68 ac.
Storage	179.9 ac.ft.	5.67 ac.ft.
Rip-rap	745 cu.yds.	

One rubble-masonry spillway - 33 cu.yds.

River bank control

1260 lineal feet of bank protected.
3780 sq. yds. rip-rap placed.

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Rye Makes 24 Bushels with 6-inch Topsoil and Only 16 When there is None

The following table indicates that depth of topsoil does have an effect on the yield of crops in the Huron area even in comparatively dry years, such as the one just past. The yield of grain was lower when the topsoil was completely removed, however, the grain yield was not directly proportioned to the depth of topsoil where two or more inches of topsoil remained. Depth of topsoil is more likely to be a factor of great importance during seasons of abundant moisture. During dry seasons moisture will be a greater limiting factor in crop production than is the depth of the topsoil.

Crop Yields From Different Depths of Topsoil

<u>Crop</u>	<u>Depth of Topsoil</u>	<u>Bushels per Acre</u>	<u>Pounds of Straw per A.</u>
Rye	none	16.0	3063
Rye	2 inches	26.7	5064
Rye	4 inches	28.0	5727
Rye	6 inches	23.8	6138

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The Deeper the Topsoil, the Greater the Yield, 1940 Winner Study Demonstrates

A study was made in the Winner area during 1940 to determine the relation of crop yield to the depth of topsoil. Wheat was planted in all these experiments on a Sooner Milo stubble. There was a definite reduction in the yield of grain and straw with the removal of topsoil in this area of Boyd clay.

Figures showing these facts in detail are:

Depth of Topsoil	Slope	Straw Yield in Pounds	Grain Yield in Bushels
8 inches	2%	2429	14.8
6 inches	5%	2700	13.2
4 inches	9%	1735	11.8
1 inch	10%	1880	12.4
0 inches	12%	1630	9.2
-1 inches	3%	lost	7.8

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Faith Banker Expects Stockwater Dams To Contribute Stability to Stock Ranching

B. Datin, Vice President of the Farmers State Bank at Faith, S. Dak., has recently written to the District Supervisors relative to the value of stockwater dams and spreader systems constructed in the Tri-County soil conservation district area during the past three years:

"In 1934 and 1936 we experienced very severe droughts. At that time a number of our customers depended entirely on open water for their livestock. During those two years in different parts of our territory the water holes dried up and the creeks were dry. Then, as a result, considerable livestock had to be shipped out of the country. At this time we have about three hundred dams that we did not have in 1934 and 1936, and regardless of the severity of any drought we may have in the future we feel that these dams are going to furnish all the stock water we shall need.

"Naturally, we feel that our range loans are much safer than before these dams were built. We also believe that the spreader systems constructed here will greatly increase hay production and will enhance the value of the ranches on which they are built."

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Little Cost for Conservation Practices

The experience in the Clay County and the Sioux-Brule soil conservation districts shows that there is no appreciable cost in connection with the installation of soil conservation practices on farm lands within the districts. The only problem involved is the switching over from the old type of farming to the new system involving soil conservation practices. This entails no change in machinery or equipment and no change in power requirements. The only time that there is a cost item is when structures such as terraces and rubble masonry drops are constructed and when trees or grass seed are purchased for planting purposes. Many farmers in the area state they have had increased yields and lower production costs through savings in time and soil after adopting conservation measures.

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Grasshoppers Overgrazers

During the last three years a study has been conducted in the Huron demonstration area to determine the effect of grasshoppers on pasture vegetation. On an area screened to exclude the grasshoppers the average yield was 1,344 pounds per acre. The plot immediately adjacent which was not screened produced an average yield of 864 pounds per acre. Livestock were excluded from both plots.

These figures would indicate that overgrazing by grasshoppers is as real as overgrazing by livestock.

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Clearfield-Keyapaha Chairman Plans to
Reseed Eroded Idle Cropland to Grass

Dennis B. Lyons, Chairman of the Board of District Supervisors of the Clearfield-Keyapaha soil conservation district, operates a 2400-acre unit. Of this amount 684 acres were badly eroded crop land. He seeded 139 acres of this to grass in 1939 and an additional 144 acres in the fall of 1940. As time goes on he intends to plant all of the remaining idle land to adapted grasses and in this way change his unit from a farming unit to a livestock ranch.

As a result of the wind erosion on these fields the slopes were beginning to gully. Under the district program Mr. Lyons ran contour lines around the worst places in the field and put in modified terraces using a common road grader and four horses. The purpose of these terraces was to stop the water from concentrating in the gullies.

The condition of his native pasture was somewhat similar to that found in the cultivated fields as the drainageways were filled with blow soil. The water from the hillsides during rains and thaws was washing gullies. To remedy this Mr. Lyons, with district assistance, laid out a system of spreader ditches, contour furrows, and check dams. The spreader system was constructed by intercepting the runoff water in the drainageways and carrying this through ditches with 1 percent grade to suitable spreading areas. At the place where the spreading action was desired the gradient was flattened out with resultant spilling of water from inception ditches on the desired area. Additional spreading action was obtained by the construction of several contour furrows which provided excellent distribution of surplus water over the entire area.

In order to control wind erosion, the fields that are farmed are cultivated by following a program of strip-cropping. He has found that the success and failure of cultivated crops

on sandy soil depends on whether or not the land is farmed with strips. He has also constructed a diversion ditch to prevent fertile topsoil coming from an adjacent field on to his pasture land.

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15 Bushels on Strip Crop; 6 on Blocked

Frank Feser, Chairman of the Board of Supervisors of the Brown-Marshall district made the following statement the other day:

"I got 15 bushels of Thatcher wheat per acre from strip cropped land and only 6 bushels per acre from the blocked area. Yes, the soil was the same and the seed planted the same week. I fail to see that it costs any more to strip crop than to block farm. There is no doubt about a difference of a paying yield when some land is strip cropped, and no yield at all when the same land is block farmed."

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We Cannot Stop Now

"We cannot stop doing soil conservation work now," says Louie E. Braun who lives three miles north and three miles east of Wolsey, S. Dak., "because we have not yet had time to fully try out the practices we think are going to be the most practical in our territory. When we first started our soil conservation work, soil was piled along our fence lines and among our buildings. We have had to do a great deal of work to remove enough of this soil to keep our cattle in our pastures and properly run our farms and also to make our homesteads liveable. What we want to do now is put a cover on wind erosion so that this condition will never occur again."

"We have often heard," continued Mr. Braun, "that an ounce of prevention is worth a pound of cure but in soil conservation I believe that an ounce of prevention is worth ten pounds of cure. From now on my idea is to keep my soil

where it is so that I do not have to move it after the wind has piled it up. The cost of moving eroded soil is too great and we have also found that the best part of the soil has actually left the country."

Upon further questioning, this Beadle county farmer continued by saying, "If we can get permanent grass that will actually grow, then we can put a rotation of grass all over our crop land about every 12, 15, or 18 years which will tend to renew and rebuild our soil. Then if we till our land so as to destroy weeds, prepare a seedbed, and still keep the stubble and other crop residue on the surface as a protective mulch we can raise the crops we need and also have wind erosion under control."

"With proper grazing, I believe our pastures will come back and give us the feed needed," further stated Mr. Braun when questioned relative to pasture management. "Where a pasture is too small for the livestock on the farm cropland should be seeded to grass to provide ample feed without overgrazing. With a few shelterbelts running through the fields where they will do the most good to prevent soil erosion, and with ample trees around the buildings and the practices mentioned before, we will be able to handle this land as we have been hoping to handle it and make this country a better place in which to live."

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Clay County Pupil Writes Essay About Visit to See Soil Conservation Methods

Ed Landeen, Clay County District Supervisor, arranged for a group of 7th, 8th, and 9th grade pupils of the Glenwood consolidated school in Clay county to take a tour of some of the farms in the area that are cooperating with the district. The pupils were asked by their teacher, Miss Jensen, to write an essay describing what they had seen on this trip. Below is the essay

written by Roslyn Sundstrom, which has been judged to be one of the best of the many fine stories written:

Our Trip

One afternoon Mr. Morrow and Mr. Bjorklund came to the schoolhouse and asked our teacher if we could take the afternoon off and see what the soil conservationists had done. Our teacher said we could go.....

First we went to the Bethesda home. We saw different kinds of trees the soil conservation office had planted around the fields. Different kinds of trees planted are: Cottonwood, Chinese elm, Black locust, American elm, and lilac for a hedge.

These trees were planted in 1938, were only about 12 inches tall then, but they are quite large now. The reason they planted them is to keep the hot winds from blowing over the fields. Another reason is to provide food and protection for wildlife, birdlife, etc. and a windbreak. Trees should be kept very clean so they can grow better. They should be protected from animals such as cattle. They don't get a chance to grow if they are not protected from grazing.

The next thing we visited was terraces. A terrace is built to prevent erosion. When a farmer has a terrace on his farm, he has to do contour farming. He farms in between terraces. Contour means set level at all points. The terrace is made with a blade. They push the soil up to sort of a level peak.

The place we visited next was Ed Landeen's. We saw a dam that had been built about a year ago. It was not a very big dam. It was built out of dirt and rocks and cement and a core trench was dug by a channel.....

The place we visited next was a field owned by Mr. Johnson. It is farmed by contour farming methods...In the middle of some rows was a row dug so that the water could not run off but soak into the ground.

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Results of Experiments

Runoff from $1\frac{1}{2}$ inches of water applied in one hour
on unprotected glacial soil. Columbia, Missouri
Research Bulletin 280

<u>Slope</u>	<u>Water loss</u>
1 percent	37.0 percent
2	37.5
4	43.7
12	43.4

From the data above it is evident that the rate of runoff increases but slightly with the increase in slope. While soil loss may not be noticeable on land that is nearly level, the water loss may be greater than it is generally realized to be.

Experiments with Contouring

Seven Year's Results of Contouring vs. Up and Down Hill
Listing of Corn .9% slope 157.5 feet long
2 contour lines Loessial silt loam
Average rainfall 25.4 inches

	<u>Tons per acre</u>	<u>Runoff</u>	<u>Average yield</u>
Contoured	36.4	2.8"	29.1 bu.
Up and down hill	195.0	19.0"	18.9 bu.

Time, Power, and Fuel Required in Contouring
Comparative Time and Fuel Consumption for Tractor
Cultivation on the Contour on 7.56 percent slope¹

	<u>Average speed, miles per hour</u>	<u>Area cov- ered per hour, acres</u>	<u>Fuel con- sumption, pounds per acre</u>
Up and down hill	3.88	2.43	7.63
Contour	4.27	2.74	6.91

¹ Tests conducted at Manhattan and Hays, Kansas, by the
Soil Conservation Service and the state agricultural
and engineering experiment stations cooperating.

The Effect of Slope on Soil and Water Losses
Effect of Length of Slope on Soil and Water Losses
over a 7-year period on an 8 percent slope, Clarinda, Iowa

<u>Length of slope</u>	<u>Soil loss tons per acre</u>	<u>Water loss inches</u>
630 feet	295.2	14.5
315 feet	254.6	18.0
157.5 feet	195.0	19.0

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District Activities

The map on the opposite page shows the number, size, and location of the soil conservation districts in South Dakota. The district activities that have not previously been described in the pages of the Zephyr are given in brief form here to keep our readers informed of all district activities in the state.

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Custer County District - This district was voted in on November 20 with 221 favorable and 29 negative votes. The land area in this district is 357,355 acres of which 263,951 were represented in the balloting. Supervisors are Wallie B. Clark, Paul Rasmussen, Guy Caple, Theo. G. Hesnard, and C. E. Pollard. Robert Hughes, county agent, has been elected to act as secretary of the board of supervisors.

A series of educational meetings was held in the district as soon as the board had organized to acquaint the people with the types of assistance available. A number of applications were received at these meetings and individual farm conservation plans were immediately developed by the district.

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Lawrence-Butte District - With 377 "yes" and 38 "no" votes this district was created on October 29. The land area represented in the referendum was 183,726 acres out of a total area of 255,380 acres. Supervisors in this district are F. G. Papousek, Alex Kling, James Voorhees, Warren E. Johnson, and Reginald Long. Ivan Fluharty, Lawrence county extension agent, who has previously acted as secretary to the supervisors in the Tri-County District, was elected to a similar position in this district.

The problems in this area include conservation measures for 22,000 acres of irrigated land as well as dryland and range areas. This is the first time that an irrigated area has been included within the boundaries of a soil conservation district in this state and the progress will be watched with special interest.

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Carpenter District - There were 275 votes in favor of the creation of this district and 83 votes against the creation of the district. The land area in this district is 207,360 acres lying in Beadle, Spink, and Clark counties of which 160,361 acres were represented in the balloting. Supervisors are Nels Madsen, Joshua J. Hofer, Ralph L. Gilbert, Will Merbach, and A. E. Bonkerslev. Raymond Venard, Spink county agent, will serve as secretary for the board.

Educational meetings were held immediately in this area to acquaint the farmers with the district program and work plan. Technicians from the Huron Soil Conservation Service office are assisting the supervisors in the development of individual conservation plans.

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Elk Creek District - - This district is the second in Meade county and comprises 194,844 acres of which 135,255 were represented in the referendum when 154 favorable and 32 unfavorable ballots were cast. The supervisors are Ernest Ham, Robert Roth, Harvey Ganz, Ernest Kammerer, and Olaf Peterson. The District Supervisors organized on February 7 and will have its Program of Work completed in the near future.

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Proposed Lincoln District - The hearing for the creation of this district was held on the 5th of December and the State Soil Conservation Committee on December 27 determined that there was need for the organization of this district and authorized a referendum. It is anticipated that the referendum will be held before March 1. The proposed area includes three townships in Lincoln county.

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Proposed Rosebud District - The hearing for this district was held on December 16 at Hidden Timber in Todd county. The State Soil Conservation Committee has approved the hearing and authorized the holding of a referendum. Present progress in the area indicates that the referendum will be held sometime during the month of March.

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Proposed Fall River County District - On February 3 the State Soil Conservation Committee accepted the petition for creation of this district covering approximately 376,000 acres. The hearing has been set for February 21 at Oelrichs, South Dakota.

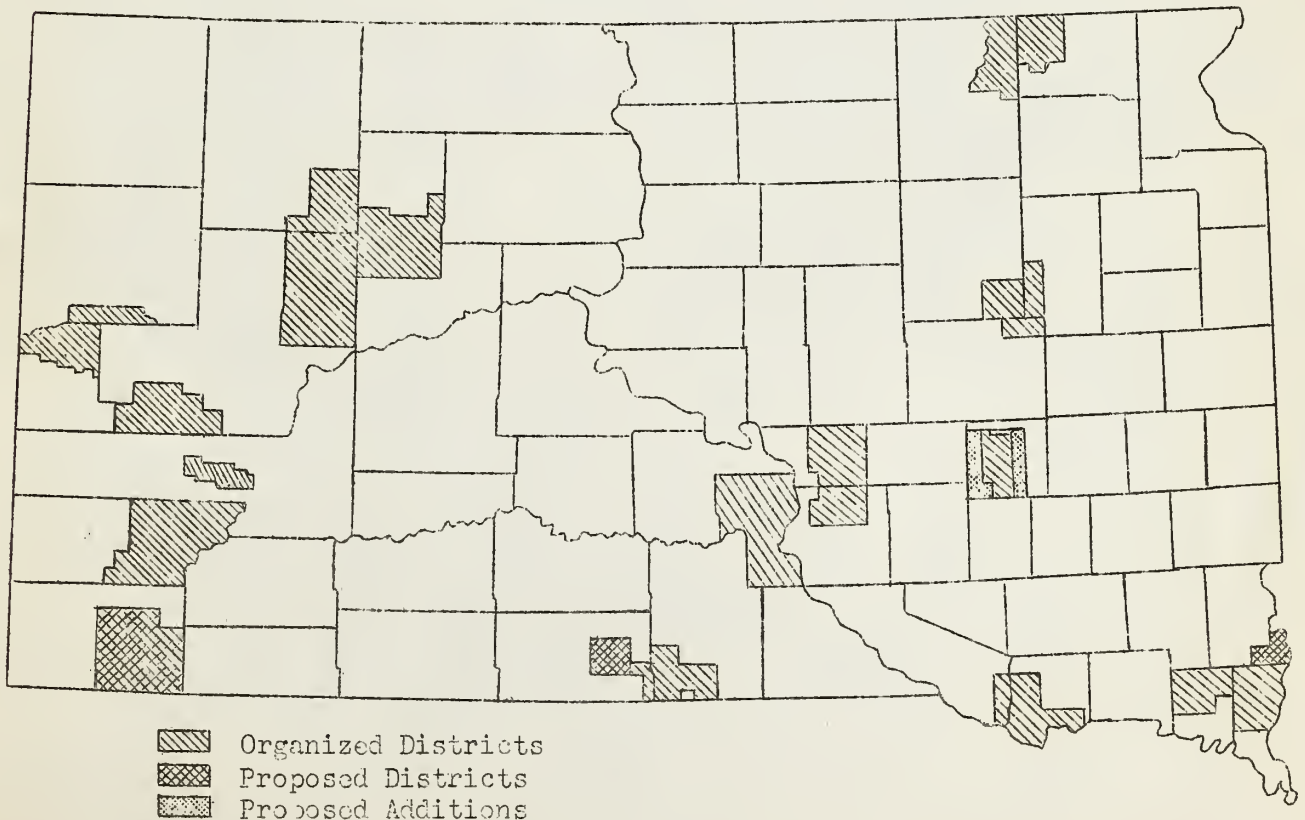
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Additional Districts - Petitions are being circulated in Roberts and southwestern Spink counties.

Educational meetings have been conducted and interest shown in district organization in the following counties: Walworth, Campbell, Beadle, and northwestern Bon Homme and Tripp.

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Additions are being made to the Clay County, Silver Creek, and American Creek soil conservation districts.



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